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| 09/899,183 | 07/06/2001 | Mikio Yamamuka | 401278 | 3158 |

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EXAMINER

BUEKER, RICHARD R

ART UNIT PAPER NUMBER

1763

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/899,183

Applicant(s)

YAMAMUKA ET AL.

Examiner

Richard Bueker

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 14-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- ☐ Interview Summary (PTO-413) Paper No(s) ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (5,835,677) taken in view of Zhao (6,210,485). Li (Fig. 1) discloses a CVD apparatus having a CVD reaction chamber connected to a vaporizer for vaporizing CVD source materials. The vaporizer (Fig. 2) includes a heated chamber having an inlet and a heat conductive chamber wall that houses the baffles 52, 54 and 56. A spray nozzle 24 is located to spray CVD precursor source materials into the chamber through the inlet, and a plate contacting and locating the tip end of the nozzle (see the baffle plate for distributing inert gas illustrated in Fig. 2 but unlabeled). It is noted that "locate" is defined as "to determine or indicate the place, site or limits of", and the plate of Li indicates the place, site or limits of the nozzle. Cooling jacket 26 is a cooling block that is provided for cooling the nozzle (see col. 8, lines 14-17), and is thus in thermal contact with the nozzle. Fig. 2 of Li also illustrates a middle portion (where thermocouple 32 is located) that is positioned between and connects the lower heated portion of Li's vaporizer with the cooled upper portion of the vaporizer. Li does not disclose the middle portion as designed or intended to act as a heat conduction restricting region, and in view of the schematic nature of patent drawings it is not clear from Li's Fig. 2 that the middle portion is a heat conduction restricting region. Zhao (Figs. 4 and 5) also discloses a vaporizer having a lower heated vaporization chamber and an upper cooled

liquid delivery section. Zhao teaches (col. 7, lines 34-45, and col. 9, lines 29-35) that a middle "neck" portion located between and connecting the heated lower portion and cooled upper portion should be narrow to act as a heat conduction restricting region. Both the neck and the space around the neck act as a heat conduction restricting region. In view of the teachings of Zhao, it would have been obvious to one skilled in the art to intentionally design the middle portion of Li's vaporizer to be narrow enough to act as a heat conduction restricting region.

Alternatively, atomizer housing 12 of Li can be considered a cooling block that is in physical contact with the nozzle, because housing 12 is cooled by the cooling jacket 26, and the portion of Li's apparatus including the cooling jacket and narrow middle portion can be considered a plate having at least one portion (the narrow middle portion) that is thinner than the heated chamber wall of the lower vaporizing chamber. In this case, the space around the middle portion can be considered to be a heat conduction restricting region as recited in claims 15 and 17. Also, if for argument's sake, the cooling jacket and narrow middle portion of Li were not considered a plate, it would have at least been obvious to form them as a plate, in view of Zhao's design (Figs. 4 and 5) having an elongated cooling jacket 104 in the shape of a plate.

Claims 14, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li taken in view of Zhao and Onabe (JP 09-143738). Li discloses the use of an ultrasonic nozzle to spray his liquid material to be vaporized, and he does not discuss the use of a nozzle having first and second coaxial tubes as claimed in claims 14, 16 and 18. Onabe (Figs. 1 and 2), however, teaches that a source material can be

Art Unit: 1763

atomized and sprayed by a nozzle having first and second coaxial tubes. Also, Zhao teaches the use of two coaxial tubes for spraying a source material. It would have been obvious to one skilled in the art to modify the apparatus of Li by substituting a spray nozzle having first and second coaxial tubes of the type taught by Zhao and Onabe for the ultrasonic spray nozzle of Li because they teach that such a coaxial spray nozzle is an alternate and successful way of spraying source materials into a vaporizer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (703) 308-1895. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Richard Bueker
Primary Examiner
Art Unit 1763